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ABSTRACT

This book contains a snapshot of state-of-the-art research on the design of automated instructional systems. Selected cognitive psychologists were asked to describe their approach to instruction and cognitive diagnosis, the theoretical basis of the approach, its utility and applicability, and the knowledge engineering or task analysis methods required to support it. The following papers are included: (1) "Automated Instruction as an Approach to Individualization" (J. Wesley Regian and Valerie J. Shute); (2) "Aptitude-Treatment Interactions and Cognitive Skill Diagnosis" (Valerie J. Shute); (3) "Possibilities for Assessment Using Computer-Based Apprenticeship Environments" (Alan Lesgold, Gary Eggan, Sandra Katz, and Govinda Rao); (4) "General Principles for an Intelligent Tutoring Architecture" (John R. Anderson, Albert T. Corbett, Jon M. Fincham, Donn Hoffman, and Ray Pelletier); (5) "Supporting Diverse Instructional Strategies in a Simulation-Oriented Training Environment" (Douglas M. Towne and Allen Munro); (6) "An Anchored Instruction Approach to Cognitive Skills Acquisition and Intelligent Tutoring" (Cognition and Technology Group, Vanderbilt University); (7) "The Application of Consistency Principles for the Assessment of Skill Development" (Arthur D. Fisk and Wendy A. Rogers); (8) "Modeling Student Performance in Diagnostic Tasks: A Decade of Evolution" (William B. Johnson and Jeffrey E. Norton); and (9) "The Use of On-Line Guidance, Representation Aiding, and Discovery Learning To Improve the Effectiveness of Simulation Training" (Kevin Bennett). (Contains 317 references.) (KRN)